

**MEMORANDUM**

SUBJECT: Use of the Ambient Ratio Method for Modeling Significant Ambient Impacts of NO<sub>2</sub>.

FROM: Daniel J. deRoeck,  
Integrated Implementation Group, ITPID (C339-03)

TO: Richard Daye,  
Air RCRA, and Toxics Division, Region VII

In your January 10, 2002 email to me, you asked for clarification of Table C-4, Significance Levels for Air Quality Impacts in Class II Areas, on page C.28 of the draft New Source Review Workshop Manual (1990). Specifically, you asked whether the significance level actually applied to NO<sub>x</sub> (as written in the table) rather than NO<sub>2</sub>, and how this would affect the use of the national default NO<sub>2</sub>/NO<sub>x</sub> value of 0.75 for significant impact modeling (an NO<sub>2</sub> annual impact of 1.0  $\mu\text{g}/\text{m}^3$ ).

The table on page C.28 should read "NO<sub>2</sub>" rather than "NO<sub>x</sub>" since the issue deals with ambient projections relevant to the national ambient air quality standard and PSD increments for nitrogen dioxide. A table similar to the one used in the Manual lists the pollutant as "NO<sub>2</sub>." See 40 CFR 51.165(b)(2).

As for modeling for significant impact, we believe that it is appropriate for you to allow the use of the ambient ratio method for NO<sub>2</sub>/NO<sub>x</sub>, as described in EPA's Guideline on Air Quality Models at 40 CFR part 51 appendix W, section 6.2.3. The most typical use of this method has been for multi-source modeling for the NAAQS or PSD increment analysis. This method is described for use in obtaining annual average estimates of NO<sub>2</sub> from point sources for new source review analyses, including PSD. The method provides that once a violation of either the NAAQS or PSD increment for NO<sub>2</sub> is modeled, assuming all NO<sub>x</sub> emitted as NO<sub>2</sub>, then it is appropriate to refine the analysis by using the NO<sub>2</sub>/NO<sub>x</sub> ratio of 0.75 (annual national default) to more accurately estimate predicted ambient NO<sub>2</sub> concentrations in the area of concern.

Although the method makes no mention of using the conversion ratio until a modeled violation is projected, we believe it is appropriate to apply the ratio earlier in the modeling process to determine whether the PSD applicant's own modeled impacts are significant for NO<sub>2</sub>. Otherwise, a source known to have only an insignificant impact on NO<sub>2</sub> would be required to perform comprehensive modeling analyses (NAAQS and increment) prior to claiming that its own impact, being insignificant, does not cause or contribute to a modeled violation.

Provided the applicant properly follows the assumption that all NO<sub>x</sub> emitted is NO<sub>2</sub>, we see no technical basis for not allowing the NO<sub>2</sub>/NO<sub>x</sub> ratio value of 0.75 for significance modeling for single sources. For similar reasons, use of the ratio should also be allowed in determining whether a single source's impact is above or below the PSD significant monitoring concentration for NO<sub>2</sub>.

This issue has been coordinated through the OAQPS Model Clearinghouse. If you have any questions regarding this interpretation of the appropriate PSD modeling approach for ambient NO<sub>2</sub>, please call me at 919-541-5593 or e-mail at [dderoeck@epa.gov](mailto:dderoeck@epa.gov).

cc: Bill Harnett  
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OAQPS/ITPID/DdeRoeck:sstephens:RTP(C339-03):541-5319:03/15/02

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**Date:** 1/10/2002 9:45:16 AM  
**Subject:** Re: Use of NO2/NOx Ratio

Dan: Thanks for your quick response. I don't have any strong opinion on the use an appropriate ratio, including the default value of 0.75. I would support the use of the ratio.

Mick